

## **REMARKS**

Claims 1-3, 5-28, 30-34, 36-59, and 61-73 are pending. Claims 1-3, 5, 8-10, 13, 14, 21, 23, 25, 30, 33, 65-68, 71, and 73 stand rejected. Claims 1, 8, 14, and 65 are amended, and claim 5 is canceled. Accordingly, after the forgoing amendment claims 1-3, 6-28, 30-34, 36-59, and 61-73 will be pending.

Independent claims 1 and 65 stand rejected under 35 U.S.C. 102(b) as being anticipated by EP1225648 (Shibata). Applicant has amended claims 1, and 65 to include the limitation of dependent claim 5. Therefore claims 1, and 65 now recite that the “porous region is bounded by a non-porous region.” The office action states that Shibata “does not teach that the porous region is bounded by the non-porous region.” Accordingly, Applicant requests withdrawal of the 102(b) rejection.

Claim 5 (which includes a limitation that is now incorporated into claims 1 and 65) stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata in view of U.S. Pre-Grant Publication No. 2002/0048699 (Steele). To avoid a similar rejection in claims 1 and 65, Applicant amended claims 1 and 65 to recite that the member comprises non-alloyed titanium. Steele does not teach or suggest a solid state fuel cell having a member comprising non-alloyed titanium. In Steele, the substrate 3 (see figure 2) has a porous region 9 surrounded by a non-porous region 8 but is made from ferritic stainless steel (see: para [0012], line 2; para [0065], line 1; claim 1 para (i)). A ferritic stainless steel is of course an alloy, principally of iron with alloying amounts of other elements. Specifically, ferritic stainless steels are iron-chromium alloys which contain a small amount of titanium or niobium to react with carbon, to prevent chromium carbide precipitating out at grain boundaries and making the material vulnerable to corrosion.

Steele teaches a specific ferritic stainless steel: a titanium/niobium stabilised stainless steel containing 17.5 to 18 wt% chromium and having the European designation 1.4509 (see: paras [0014] and [0015]; para [0065], lines 14 to 16; claims 3 and 4). Such a steel however contains titanium only in an amount of 0.1 to 0.6 wt%. This is shown by the accompanying data sheet from AK Steel Corporation of West Chester, Ohio (see: page 3, last line of the left-hand column). The reference to “European designation 1.4509” in Steele is believed clearly to be a reference to DIN 1.4509, as in the A K Steel data sheet. Steele therefore does not

disclose the use of a substrate of non-alloyed titanium (nor, for that matter, a substrate containing at least 51 wt% titanium which, at even that titanium level, could not be a ferritic stainless steel).

Thus, neither Shibata nor Steele teaches or suggests a fuel cell member as claimed, which has a non-porous region surrounding a porous region and comprises metallic titanium (or an alloy having at least 51 wt% titanium). Accordingly, claims 1 and 65 are patentable over both Shibata and Steele. *See In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974)(stating that all limitations set forth in a patent claim must be taught or suggested in the prior art to establish a *prima facie* case of obviousness).

Furthermore, a proper case for *prima facie* obviousness must include motivations to combine that are “articulated reasoning with some rational underpinning.” *See In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006) (cited with approval in *KSR Int’l v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007)) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). In that regard, Shibata proposes (see paragraphs [0037 and [0038]) the use of titanium only as the material of the adhering cathode layer of the air electrode of the fuel cell described and *not* as a material for the separate and distinct fuel electrode [i.e. the fuel electrode of Shibata]. Steele on the other hand, includes a ferritic stainless steel substrate that is to be exposed to both air and fuel on its opposite sides. In other words, the respective functions of the air electrode of Shibata and the substrate of Steele are entirely different. Thus, there is no motivation for a person of ordinary skill in the art to combine the teachings of Shibata and Steele to achieve the fuel cell as claimed in claims 1 and 65, and further, the Office Action has not provided the requisite articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

Based on the forgoing, Applicant submits that claims 1-3, 6-28, 30-34, 36-59, and 61-73 are in condition for allowance. Accordingly, favorable consideration and an early notice of allowance are earnestly solicited. If the Examiner believes that a telephone conversation would further the prosecution of this case, he is invited to telephone the undersigned at his convenience.

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